

Substitute Form PTO-1449 (Modified)	U.S. Department of Commerce Patent and Trademark Office	Attorney's Docket No. 07678-025001	Application No. 09/398,395
<b>Information Disclosure Statement by Applicant</b> (Use several sheets if necessary)  (37 CFR §1.98(b))		Applicant Joseph Chappell et al.	
		Filing Date September 17, 1999	Group Art Unit 1646

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09/398,395  
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<b>U.S. Patent Documents</b>							
Examiner Initial	Desig. ID	Patent Number	Issue Date	Patentee	Class	Subclass	Filing Date If Appropriate
	AA						
	AB						
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						
	AJ						
	AK						

<b>Foreign Patent Documents or Published Foreign Patent Applications</b>							
Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	BA	WO 96/36697	11/21/96	PCT			
	BB	WO 97/38703	10/23/97	PCT			
	BC						
	BD						
	BE						

<b>Other Documents (include Author, Title, Date, and Place of Publication)</b>		
Examiner Initial	Desig. ID	Document
	CA	Lesburg et al., <u>Current Opinion in Structural Biology</u> , 1998, 8:695-703

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Examiner Initial	Desig. ID	Patent Number	Issue Date	Patentee	Class	Subclass	Filing Date If Appropriate
	AA	5,589,619	12/31/96	Chappell et al.			
	AB	5,824,774	10/20/98	Chappell et al.			
	AC	5,849,526	12/15/98	Pichersky			
	AD	5,871,988	02/16/99	Croteau et al.			
	AE	5,876,964	03/02/99	Croteau et al.			
	AF	5,891,697	04/06/99	Croteau et al.			
	AG	5,981,843	11/09/99	Chappell et al.			
	AH	5,994,114	11/30/99	Croteau et al.			
	AI	6,008,043	12/28/99	Croteau et al.			

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<b>Foreign Patent Documents or Published Foreign Patent Applications</b>						
Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass
	AJ	WO 95/11913	05/04/95	PCT		
	AK	WO 97/15584	05/01/97	PCT		
	AL	WO 97/38571	10/23/97	PCT		
	AM	WO 99/02030	01/21/99	PCT		
	AN	WO 99/15624	04/01/99	PCT		
	AO	WO 99/18118	04/15/99	PCT		
	AP	WO 99/19460	04/22/99	PCT		
	AQ	WO 99/37139	07/29/99	PCT		
	AR	WO 99/38957	08/05/99	PCT		
	AS	EP 0 768 381	04/16/97	European		

<b>Other Documents (include Author, Title, Date, and Place of Publication)</b>		
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	AT	Starks et al., "Structural Basis for Cyclic Terpene Biosynthesis by Tobacco 5-Epi-Aristolochene Synthase," <i>Science</i> , 1997, 277:1815-1820.
	AU	Chappell, "The Biochemistry and Molecular Biology of Isoprenoid Metabolism," <i>Plant Physiol.</i> , 1995, 107:1-6.

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<b>Other Documents (include Author, Title, Date, and Place of Publication)</b>		
Examiner Initial	Desig. ID	Document
	AV	Facchini et al., "Gene family for an elicitor-induced sesquiterpene cyclase in tobacco," <u>Proc. Natl. Acad. Sci. USA</u> , 1992, 89:11088-11092.
	AW	Corey et al., "Isolation of an <i>Arabidopsis thaliana</i> gene encoding cycloartenol synthase by functional expression in a yeast mutant lacking lanosterol synthase by the use of a chromatographic screen," <u>Proc. Natl. Acad. Sci. USA</u> , 1993, 90:11628-11632.
	AX	Bohlmann et al., "Terpenoid-based defenses in conifers: cDNA cloning, characterization, and functional expression of wound-inducible (E)- $\alpha$ -bisabolene synthase from grand fir ( <i>Abies grandis</i> )," <u>Proc. Natl. Acad. Sci. USA</u> , 1998, 95:6756-6761.
	AY	Colby et al., "Germacrene C synthase from <i>Lycopersicon esculentum</i> cv. VFNT Cherry tomato: cDNA isolation, characterization, and bacterial expression of the multiple product sesquiterpene cyclase," <u>Proc. Natl. Acad. Sci. USA</u> , 1998, 95:2216-2221.
	AZ	Devarenne et al., "Molecular Characterization of Tobacco Squalene Synthase and Regulation in Response to Fungal Elicitor," <u>Arch. Biochem. Biophys.</u> , 1998, 349(2):205-215.
	BA	Back et al., "Cloning and Bacterial Expression of a Sesquiterpene Cyclase from <i>Hyoscyamus muticus</i> and Its Molecular Comparison to Related Terpene Cyclases," <u>J. Biol. Chem.</u> , 1995, 270(13):7375-7381.
	BB	Yin et al., "Regulation of Sesquiterpene Cyclase Gene Expression - Characterization of an Elicitor- and Pathogen-Inducible Promoter," <u>Plant Physiol.</u> , 1997, 115:437-451.
	BC	Mathis et al., "Pre-Steady-State Study of Recombinant Sesquiterpene Cyclases," <u>Biochemistry</u> , 36(27):8340-8348.
	BD	Back et al., "Identifying functional domains within terpene cyclases using a domain-swapping strategy," <u>Proc. Natl. Acad. Sci. USA</u> , 1996, 93:6841-6845.
	BE	Newman et al., "Characterization of the TAC box, a <i>cis</i> -element within an elicitor-inducible sesquiterpene cyclase promoter," <u>Plant J.</u> , 1998, 16(1):1-12.
	BF	Crock et al., "Isolation and bacterial expression of a sesquiterpene synthase cDNA clone from peppermint ( <i>Mentha x piperita</i> , L.) that produces the aphid alarm pheromone (E)- $\beta$ -farnesene," <u>Proc. Natl. Acad. Sci. USA</u> , 1997, 94:12833-12838.
	BG	Wildung et al., "A cDNA Clone for Taxadiene Synthase, the Diterpene Cyclase That Catalyzes the Committed Step of Taxol Biosynthesis," <u>J. Biol. Chem.</u> , 1996, 271(16):9201-9204.
	BH	Chen et al., "Cloning, Expression, and Characterization of (+)- $\delta$ -Cadinene Synthase: A Catalyst for Cotton Phytoalexin Biosynthesis," <u>Arch. Biochem. Biophys.</u> , 1995, 324(2):255-266.
	BI	Bohlmann et al., "Plant terpenoid synthases: Molecular biology and phylogenetic analysis," <u>Proc. Natl. Acad. Sci. USA</u> , 1998, 95:4126-4133.
	BJ	Cane et al., "Trichodiene Synthase. Substrate Specificity and Inhibition," <u>Biochemistry</u> , 1995, 34:2471-2479.
	BK	Pyun et al., "Regiospecificity and Isotope Effects Associated with the Methyl-Methylene Eliminations in the Enzyme-Catalyzed Biosynthesis of ( <i>R</i> )- and ( <i>S</i> )-Limonene," <u>J. Org. Chem.</u> , 1993, 58(15):3998-4009.
	BL	Anderson et al., "Farnesyl Diposphate Synthetase - Molecular Cloning, Sequence, and Expression of an Essential Gene From <i>Saccharomyces cerevisiae</i> ," <u>J. Biol. Chem.</u> , 1989, 264(32):19176-19184.
	BM	Song et al., "Yeast farnesyl-diphosphate synthase: Site-directed mutagenesis of residues in highly conserved prenyltransferase domains I and II," <u>Proc. Natl. Acad. Sci. USA</u> , 1994, 91:3044-3048.

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	BN	Ohnuma et al., "A Role of the Amino Acid Residue Located on the Fifth Position before the First Aspartate-rich Motif of Farnesyl Diphosphate Synthase on Determination of the Final Product," <u>J. Biol. Chem.</u> , 1996, 271(48):30748-30754.	
	BO	Tarshis et al., "Regulation of product chain length by isoprenyl diphosphate synthases," <u>Proc. Natl. Acad. Sci. USA</u> , 1996, 93:15018-15023.	
	BP	Tarshis et al., "Crystal Structure of Recombinant Farnesyl Diphosphate Synthase at 2.6-Å Resolution," <u>Biochemistry</u> , 1994, 33:10871-10877.	
	BQ	Mau et al., "Cloning of casbene synthase cDNA: Evidence for conserved structural features among terpenoid cyclases in plants," <u>Proc. Natl. Acad. Sci. USA</u> , 1994, 91:8497-8501.	
	BR	Wendt et al., "Structure and Function of a Squalene Cyclase," <u>Science</u> , 1997, 277:1811-1815.	
	BS	Cane et al., "Trichodiene Synthase. Identification of Active Site Residues by Site-Directed Mutagenesis," <u>Biochemistry</u> , 1995, 34:2480-2488.	
	BT	Cane et al., "Trichodiene Biosynthesis and the Stereochemistry of the Enzymatic Cyclization of Farnesyl Pyrophosphate," <u>Bioorg. Chem.</u> , 1985, 13(3):246-265.	
	BU	Wheeler et al., "Direct demonstration of the isomerization component of the monoterpene cyclase reaction using a cyclopropylcarbinyl pyrophosphate substrate analog," <u>Proc. Natl. Acad. Sci. USA</u> , 1987, 84(14):4856-4859.	
	BV	Pyun et al., "Stereochemistry of the Proton Elimination in the Formation of (+)- and (-)- $\alpha$ -Pinene by Monoterpene Cyclases from Sage ( <i>Salvia Officinalis</i> )," <u>Arch. Biochem. Biophys.</u> , 1994, 308(2):488-496.	
	BW	Croteau, "Evidence for the Ionization Steps in Monoterpene Cyclization Reactions Using 2-Fluorogeranyl and 2-Fluorolinalyl Pyrophosphates as Substrates," <u>Arch. Biochem. Biophys.</u> , 1986, 251(2):777-782.	
	BX	Croteau et al., "Irreversible Inactivation of Monoterpene Cyclases by a Mechanism-Based Inhibitor," <u>Arch. Biochem. Biophys.</u> , 1993, 307(2):397-404.	
	BY	Rajaonarivony et al., "Characterization and Mechanism of (4S)-Limonene Synthase, A Monoterpene Cyclase from the Glandular Trichomes of Peppermint ( <i>Mentha X piperita</i> )," <u>Arch. Biochem. Biophys.</u> , 1992, 296(1):49-57.	
	BZ	Rajaonarivony et al., "Evidence for an Essential Histidine Residue in 4S-Limonene Synthase and Other Terpene Cyclases," <u>Arch. Biochem. Biophys.</u> , 1992, 299(1):77-82.	
	CA	Aleshin et al., "Refined Crystal Structures of Glucoamylase from <i>Aspergillus awamori</i> var. X100," <u>J. Mol. Biol.</u> , 1994, 238:575-591.	
	CB	Juy et al., "Three-dimensional structure of a thermostable bacterial cellulase," <u>Nature</u> , 1992, 357(6373):89-91.	
	CC	Altschul et al., "Gapped BLAST and PSI-BLAST: a new generation of protein database search programs," <u>Nucleic Acids Res.</u> , 1997, 25(17):3389-3402.	
	CD	Back, et al., "Expression of a Plant Sesquiterpene Cyclase Gene in <i>Escherichia coli</i> ." <u>Arch. Biochem. Biophys.</u> , 1994, 315(2):527-532.	
	CE	Cane, "Enzymatic Formation of Sesquiterpenes," <u>Chem. Rev.</u> , 1990, 90:1089-1103.	
	CF	Cane et. al., "Aristolochene Biosynthesis and Enzymatic Cyclization of Farnesyl Pyrophosphate," <u>J. Am. Chem. Soc.</u> , 1989, 111:8914-8916.	

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	CG	Cane et al., "Overexpression in <i>Escherichia coli</i> of Soluble Aristolochene Synthase from <i>Penicillium roqueforti</i> ," <i>Arch. Biochem. Biophys.</i> , 1993, 304(2):415-419.
	CH	Hohn et al., "Purification and Characterization of the Sesquiterpene Cyclase Aristolochene Synthase from <i>Penicillium roqueforti</i> ," <i>Arch. Biochem. Biophys.</i> , 1989, 272(1):137-143.
	CI	Laskovics et al., "Prenyltransferase: Determination of the Binding Mechanism and Individual Kinetic Constants for Farnesylpyrophosphate Synthetase by Rapid Quench and Isotope Partitioning Experiments," <i>Biochemistry</i> , 1981, 20(7):1893-1901.
	CJ	Lesburg et al., "Crystal Structure of Pentalenene Synthase: Mechanistic Insights on Terpenoid Cyclization Reactions in Biology," <i>Science</i> , 1997, 277(5333):1820-1824.
	CK	Munck et al., "Purification and Characterization of the Sesquiterpene Cyclase Patchoulol Synthase from <i>Pogostemon cablin</i> ," <i>Arch. Biochm. Biophys.</i> , 1990, 282(1):58-64.
	CL	Proctor et al., "Aristolochene Synthase. Isolation, characterization, and bacterial expression of a sesquiterpenoid biosynthetic gene ( <i>Ari1</i> ) from <i>Penicillium roqueforti</i> ," <i>J. Biol. Chem.</i> , 1993, 268(6):4543-4548.
	CM	Vogel et al., "Abietadiene Synthase from Grand Fir ( <i>Abies grandis</i> )", <i>J. Biol. Chem.</i> , 1996, 271(38):23262-23268
	CN	Bohlmann et al., "Monoterpene Synthases from Grand Fir ( <i>Abies grandis</i> )", <i>J. Biol. Chem.</i> , 1997, 272(35):21784-21792.
	CO	Starks et al., "Structural Basis for Cyclic Terpene Biosynthesis by Tobacco 5-Epi-Aristolochene Synthase", <i>Science</i> , 1997, 277:1815-1819.
	CP	Genbank Accession No: Q40577
	CQ	Genbank Accession No: AB022598
	CR	Genbank Accession No: Y18484
	CS	Genbank Accession No: U48796
	CT	Genbank Accession No: AF035631
	CU	Genbank Accession No: L13459
	CV	Genbank Accession No: AF051901
	CW	Genbank Accession No: AF051900
	CX	Genbank Accession No: AF051899
	CY	Genbank Accession No: AF006194
	CZ	Genbank Accession No: U92267
	DA	Genbank Accession No: U92266
	DB	Genbank Accession No: AF024615
	DC	Genbank Accession No: U87909
	DD	Genbank Accession No: U87908

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	DE	Genbank Accession No: AF006193
	DF	Genbank Accession No: US0768
	DG	Genbank Accession No: L32134
	DH	Genbank Accession No: AF006195
	DI	Genbank Accession No: AJ005588
	DJ	Genbank Accession No: Q43714
	DK	Genbank Accession No: AF061285
	DL	Genbank Accession No: AF043299
	DM	Genbank Accession No: AB022719
	DN	Genbank Accession No: AB023816
	DO	Genbank Accession No: AF043298
	DP	Genbank Accession No: AF043300
	DQ	Genbank Accession No: AF042382
	DR	Genbank Accession No: B56118
	DS	Genbank Accession No: C56118
	DT	Genbank Accession No: U20187
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